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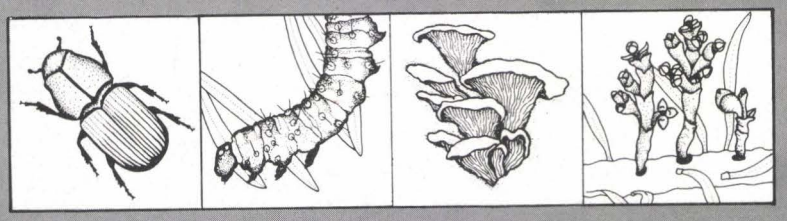

Report No. 83-9 3450
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# EVALUATION OF A PROPOSED DWARF MISTLETOE PROJECT, STEVENSVILLE RANGER DISTRICT, BITTERROOT NATIONAL FOREST, MONTANA

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by

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## ABSTRACT

Residual Douglas-fir and lodgepole pine are dwarf mistletoe-infested and pose a threat to existing regeneration. Felling or girdling these residuals, along with sanitation/thinning of dense patches of regeneration, will reduce dwarf mistletoe intensity and increase future volume yields. Present net worth of the project is $0.50/acre. Benefit/cost ratio is 1.01/1. Use of pest management funds is recommended.

## INTRODUCTION

The Stevensville RD has proposed dwarf mistletoe control on 262 acres of 10- to 15-year-old plantations in the Sawmill Creek drainage. They have also proposed presuppression surveys on 600 acres in the Butterfly and Eastman Creek drainages. We visited several of the stands in the Sawmill Creek drainage on December 3, 1982. We were accompanied by Norbert Curry, Jack Cornelisse, and Chuck Stanich, Stevensville RD.

## CAUSAL AGENTS, HOSTS, AND DAMAGE

Arceuthobium douglasii attacks Douglas-fir, Pseudotsuga menziesii; A. americanum attacks lodgepole pine, Pinus contorta. Dwarf mistletoe infection causes a reduction in tree vigor, height, and diameter growth, along with some mortality. Volume loss estimates in infested Douglas-fir type are about 20 cubic feet per acre per year. 3/ Volume loss in infested lodgepole pine type is 8 cubic feet per acre per year. 3/ This does not include losses to other pathogens and insects in trees made vulnerable by dwarf mistletoe.

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1/ Plant Pathologist, CFPM.
2/ Silviculturist, Stevensville RD.
3/ Dooling, O. J., and R. G. Eder. 1981. As assessment of dwarf mistletoes in Montana. USDA Forest Service, Northern Region. Forest Pest Management Report 81-12.

## PROJECT DESCRIPTION

The proposed control project is in Sections 16, 17, 18, and 20, T8N, R18W, on the east side of the Stevensville RD. The area covers 470 acres, all of which was cutover in 1966. The area was examined in 1982, and 262 acres were determined to be in need of dwarf mistletoe treatment. This includes stands 108-1-02, 108-1-03, 108-1-04, 108-2-01, 108-2-02, and 108-2-05. There are currently 14 to 677 trees/acre of seedling-saplings and 4 to 57 trees/acre of small sawlog, pole-size, or non-merchantable trees in these stands. Present species composition is 40 percent Douglas-fir, 30 percent ponderosa pine, 27 percent lodgepole pine, and 3 percent other species. Dwarf mistletoe is present in about 25 percent of the Douglas-fir and 1 percent of the lodgepole pine.

The 600 acres proposed for presuppression surveys are in Sections 11, 14, 15, 22, and 23; T6N, R19W, also on the east side of the Stevensville RD.

## MANAGEMENT ALTERNATIVES

1. Defer treatment.--Potential yields would be about 50 percent lower than in alternative 2. Dwarf mistletoe infestation would become worse. This alternative has the advantage of requiring no investment of pest management funds.

2. Remove dwarf mistletoe-infested residuals and thin/sanitize existing regeneration.--This would largely eliminate dwarf mistletoe from Douglas-fir and lodgepole pine and maximize volume yields.

3. Convert to nonsusceptible species.--This is biologically sound, but potential yields may be lower than in alternative 2. This would not be as silviculturally desirable as maintaining a diversified stand containing susceptible species. This would also forego the accumulated growth of the stand.

## PREFERRED ALTERNATIVE

Preferred treatment for all stands is alternative 2.

## ECONOMIC ANALYSIS

Economic analysis of the control project is based on the following data:

| | |
|---|---|
| Control costs | $ 70.50/acre |
| Years to product | 110 |
| Yield prediction | |
| No treatment | 6 MBF/acre |
| Treatment | 11 MBF/acre |
| Average stumpage, last 5 years | $100/MBF |
| Discount | 4 percent |

| Year | Volume without treatment (MBF/acre) | Volume with treatment (MBF/acre) | Benefit of treatment (MBF/acre) | Benefit value at harvest 1/ ($/acre) | Present value of benefit 2/ ($/acre) | Project cost ($/acre) |
|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 70.50 |
| 110 | 5 | 11 | 6 | 5,298.72 | 71.00 | - |
| | 5 | 11 | 6 | 5,298.72 | 71.00 | 70.50 |

1/ Current stumpage of $100/MBF increased at 2 percent compound interest.
2/ Harvest value discounted to present at 4 percent.

Present net worth is the difference between present value of benefits and project cost: $0.50 acre. Benefit/cost ratio is 1.01/1. Increasing stumpage values over time make the project barely economically feasible.

## DISCUSSION

Recovery of volume losses through dwarf mistletoe control could generate additional employment in the forest products industry and result in "value added." While value added cannot be used in an economic analysis, it is substantial enough to be considered when determining overall benefits. Each million board feet of timber cut creates 7.3 person years of employment, 4/ paying an average of $18,500 per person per year. 5/ For the proposed control project, this increased employment amounts to 0.0365 year in 2093, and would add $675.25 to the economy for each acre in the treatment area.

This project shows a limited return but the overall benefits, reducing or eliminating dwarf mistletoe for more than a single rotation and increased present and future employment, sometimes outweigh decisions based strictly on financial considerations.

Control also protects other investments such as costs for site preparation, planting, and timber stand improvement.

4/ Personal communication; Charles Keegan, Bureau of Business and Economics Research, University of Montana, Missoula, Montana (December 1982).
5/ Personal communication; Paul Polzin, Bureau of Business and Economics Research, University of Montana, Missoula, Montana (December 1982).

## RECOMMENDATIONS

Reduction of dwarf mistletoe impact through silvicultural practices is both biologically and economically sound. We recommend the use of insect and disease funds for the project.

Because control will be by felling or girdling scattered cull trees from areas already essentially clearcut, and thinning of overstocked stands, there will be no additional adverse impact on other resources. The project is neither major nor controversial, and does not need an environmental analysis.